

WE CLAIM:

1. A composition comprising natural gas and dimethyl ether.
2. The composition of Claim 1 wherein the natural gas is a lean natural gas.
3. The composition of Claim 2 wherein the lean natural gas comprises less than about 3 mol% of C₂ to C₅ hydrocarbons with the balance of the hydrocarbons in the lean natural gas being essentially methane, based on the total composition.
4. The composition of Claim 1 wherein dimethyl ether is present in an amount of less than 25 mol% based on the total composition.
5. The composition of Claim 1 wherein dimethyl ether is present in an amount of less than 20 mol% based on the total composition.
6. The composition of Claim 1 wherein dimethyl ether is present in an amount of from 10 mol% to 15 mol% based on the total composition.
7. The composition of Claim 1 wherein the natural gas is derived from a regasified LNG product produced in an LNG process.
8. The composition of Claim 1 having a heating value of from about 1000 BTU/scf to about 1200 BTU/scf.
9. The composition of Claim 1 having a heating value of from about 1030 BTU/scf to about 1170 BTU/scf.

10. The composition of Claim 1 having a heating value of from about 1050 BTU/scf to about 1150 BTU/scf.

11. A method for preparing a fuel blend comprising natural gas and dimethyl ether, the method comprising mixing a natural gas component and dimethyl ether.

12. The method of Claim 11 wherein the natural gas component is derived from a regasified LNG product prepared in a LNG process.

13. The method of Claim 12 further comprising:

pre-treating a natural gas stream comprising acid gases, water and other contaminants therein to remove at least a portion of the contaminants therefrom and provide a natural gas feed;

cooling the natural gas feed in the LNG process to liquefy at least a portion of the natural gas component and thereby produce a LNG product; and

re-gasifying the LNG product to obtain the natural gas component.

14. The method of Claim 13 further comprising:

providing dimethyl ether; and

mixing the dimethyl ether with the natural gas component to obtain the fuel blend.

15. The method of Claim 14 wherein mixing of the natural gas component and dimethyl ether occurs at a site remote from the location where the natural gas stream originates.

16. The method of Claim 12 wherein the dimethyl ether is blended in an amount such that the concentration of dimethyl ether in the fuel blend is less than 25 mol% based on the total fuel blend.

17. The method of Claim 12 wherein the dimethyl ether is blended in an amount such that the concentration of dimethyl ether in the fuel blend is less than 20 mol% based on the total fuel blend.

18. The method of Claim 12 wherein the dimethyl ether is blended in an amount such that the concentration of dimethyl ether in the fuel blend is from 10 mol% to 15 mol% based on the total fuel blend.

19. The method of Claim 12 wherein the fuel blend has a heating value of from about 1000 BTU/scf to about 1200 BTU/scf.

20. The method of Claim 12 wherein the fuel blend has a heating value of from about 1030 BTU/scf to about 1170 BTU/scf.

21. The method of Claim 12 wherein the fuel blend has a heating value of from about 1050 BTU/scf to about 1150 BTU/scf.

22. The method of Claim 11 further comprising:

pre-treating a natural gas stream comprising acid gases, water and other contaminants therein to remove at least a portion of the contaminants therefrom and provide a natural gas feed for a LNG process;

mixing the dimethyl ether into the natural gas feed within a LNG process at a temperature above -220°F (-140°C) and in an amount such that the dimethyl ether does not solidify and form a separate solid phase during liquefaction of the natural gas feed in the LNG process; and

cooling the resulting natural gas and dimethyl ether mixture within the LNG process to a temperature of from about -240°F (-151°C) to about -260°F (-162°C) or less so as to liquefy at least a portion of the mixture and thereby produce a blended liquid product at substantially atmospheric pressure; and

re-gasifying the blended liquid product to produce the fuel blend.

23. The method of Claim 22 wherein the fuel blend comprises dimethyl ether in an amount of 5 mole % or less based on the total fuel blend.

24. A method for preparing a fuel blend comprising natural gas and dimethyl ether, the method comprising:

pre-treating a natural gas stream comprising acid gases, water and other contaminants therein to remove at least a portion of the contaminants therefrom and provide a natural gas feed;

cooling the natural gas feed in a LNG process to liquefy at least a portion of the natural gas component and thereby produce a LNG product;

providing dimethyl ether;

re-gasifying the LNG product to obtain the natural gas component; and

mixing the dimethyl ether with the natural gas component to obtain the fuel blend.